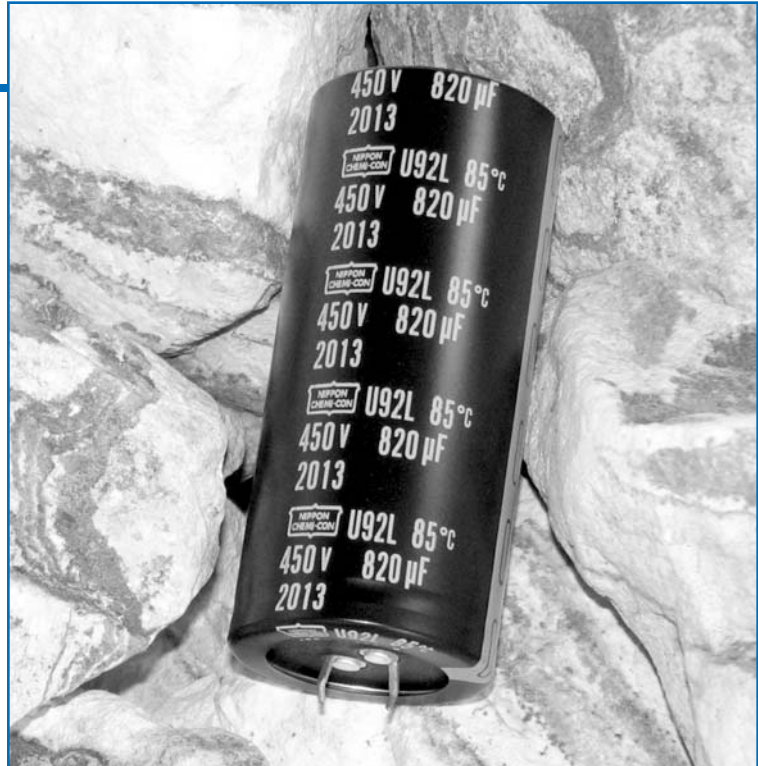


U92L Series



- Snap Mount
- Specific Design For Higher Ripple Current
- 350 to 500VDC Voltage Range
- RoHS Compliant
- +85°C Maximum Temperature
- 10,000 Hours Lifetime at +85°C



The U92L series is a longer life series specifically designed for higher ripple current capability. The U92L capacitors have an endurance rating of 10,000 hours at +85°C with the rated ripple current applied. All U92L series capacitors are RoHS compliant and offered in a variety of sizes, with or without a PPE end disk, and encased in a standard PVC sleeve or optional PET sleeve. UL746C compliant exterior insulation material for sleeve and end disk is also available. Snap-in terminals (2, 4 or 5-pin configurations) are available as standard or optional styles depending on case size. Straight standoff terminals (5-pin configuration) are an option for 40, 45 and 50mm can diameters.

Summary of Specifications

- PC board snap-in or straight standoff terminals available as standard or optional styles depending on pin styles and case size.
- Capacitance range: 150 to 3,300µF.
- Voltage range: 350 to 500VDC.
- Category temperature range: -40°C to +85°C.
- Leakage current: $3\sqrt{CV}$ (µA) or 3mA, whichever is smaller, after 5 minutes at +25°C.
- Standard capacitance tolerance: ±20%
- Nominal case size (D×L): 30×40mm to 50×105mm.
- Rated lifetime: 10,000 hours at +85°C with the rated ripple current applied.

U92L Series

U92L Specifications - Snap Mount

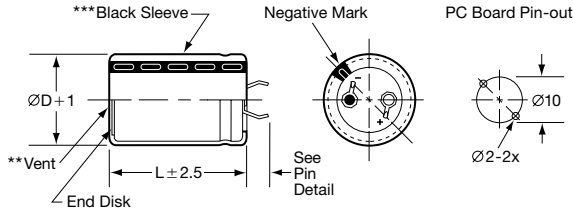
Item	Characteristics																											
Category Temperature Range	- 40 to +85°C																											
Rated Voltage Range	350 to 500VDC																											
Capacitance Range	150 to 3,300 μ F at +25°C, 120Hz																											
Capacitance Tolerance	\pm 20% (M) at +25°C, 120Hz																											
Leakage Current	$I = 3\sqrt{CV}$ (μ A) or 3mA, whichever is smaller, after 5 minutes at +25°C. Where I = Max. leakage current (μ A), C = Nominal capacitance (μ F) and V = Rated voltage (V)																											
Dissipation Factor (Tan δ)	At +25°C, 120Hz <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>350-400</td> <td>420-500</td> </tr> <tr> <td>Tan δ (DF) Max.</td> <td>0.15</td> <td>0.20</td> </tr> </table>	Rated Voltage (V)	350-400	420-500	Tan δ (DF) Max.	0.15	0.20																					
Rated Voltage (V)	350-400	420-500																										
Tan δ (DF) Max.	0.15	0.20																										
Low Temperature Characteristics	At 120Hz, impedance (Z) ratio between the - 40°C value and +25°C value shall not exceed the values given below. <table border="1"> <tr> <td>Rated Voltage (V)</td> <td>350-400</td> <td>420-500</td> </tr> <tr> <td>Z(-40°C) / Z(+25°C)</td> <td>4</td> <td>8</td> </tr> </table>	Rated Voltage (V)	350-400	420-500	Z(-40°C) / Z(+25°C)	4	8																					
Rated Voltage (V)	350-400	420-500																										
Z(-40°C) / Z(+25°C)	4	8																										
Rated Ripple Current Multipliers	Ambient Temperature (°C) <table border="1"> <tr> <td>+45°C</td> <td>+65°C</td> <td>+85°C</td> </tr> <tr> <td>2.82</td> <td>1.73</td> <td>1.00</td> </tr> </table> Frequency (Hz) <table border="1"> <tr> <td>DC Rated Voltage</td> <td>50Hz</td> <td>120Hz</td> <td>300Hz</td> <td>1kHz</td> <td>10kHz</td> <td>100kHz</td> </tr> <tr> <td>350-450V</td> <td>0.77</td> <td>1.00</td> <td>1.16</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> <tr> <td>500V</td> <td>0.70</td> <td>1.00</td> <td>1.16</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> </table>	+45°C	+65°C	+85°C	2.82	1.73	1.00	DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz	350-450V	0.77	1.00	1.16	1.30	1.41	1.43	500V	0.70	1.00	1.16	1.30	1.41	1.43
+45°C	+65°C	+85°C																										
2.82	1.73	1.00																										
DC Rated Voltage	50Hz	120Hz	300Hz	1kHz	10kHz	100kHz																						
350-450V	0.77	1.00	1.16	1.30	1.41	1.43																						
500V	0.70	1.00	1.16	1.30	1.41	1.43																						
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +25°C after subjecting them to DC voltage for 10,000 hours at +85°C with the rated ripple current applied. The sum of the DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan δ (DF) : $\leq 200\%$ of initial specified value Leakage current : \leq initial specified value																											
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +25°C after exposing them for 1,000 hours at +85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: $\leq \pm 20\%$ of initial measured value Tan δ (DF) : $\leq 150\%$ of initial specified value Leakage current : \leq initial specified value																											
Custom Designs	Custom CV values per case size and termination type may be available upon request. Contact appropriate representative with specific requirements.																											

U92L Series

Diagram of Dimensions - Snap Mount

Snap Mount

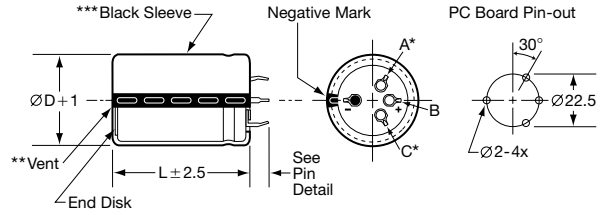
VSN Snap-in $\varnothing 30$ and $\varnothing 35$ standard
VNN Snap-in $\varnothing 30$ and $\varnothing 35$ optional



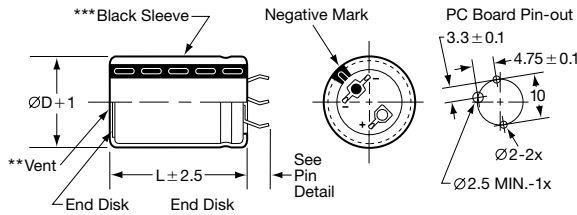
Snap Mount

Unit: mm

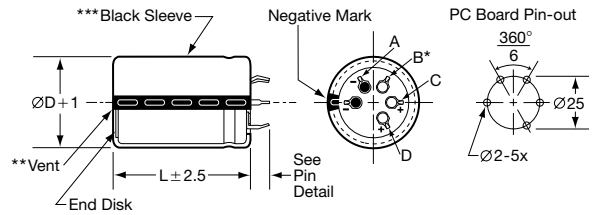
VND Snap-in $\varnothing 35$ and $\varnothing 40$ standard; $\varnothing 45$ optional
VSD Snap-in $\varnothing 35$ and $\varnothing 40$ optional



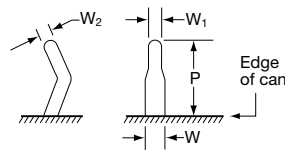
VEN Snap-in $\varnothing 30$ and $\varnothing 35$ optional



VNT Snap-in $\varnothing 45$ and $\varnothing 50$ standard



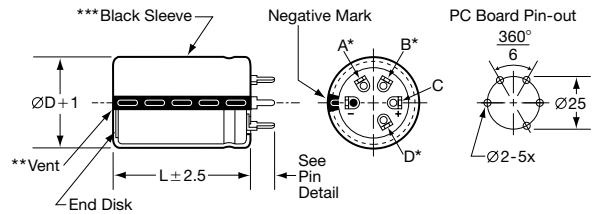
VS, VE & VN Snap-in Pin Dimensions



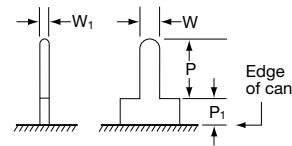
Type	P	W	W ₁	W ₂
VSN $\varnothing 30$	4.0 ± 0.5	1.5 ± 0.2	0.8 ± 0.1	0.8 ± 0.1
VSN $\varnothing 35$	3.5 ± 0.5			
VNN $\varnothing 30$ - $\varnothing 35$	5.8 ± 1.0			
VEN $\varnothing 30$ - $\varnothing 35$	4.0 ± 0.5			
VSD $\varnothing 35$ - $\varnothing 40$	3.5 ± 1.0			
VND $\varnothing 35$ - $\varnothing 45$	5.8 ± 1.0			
VNT $\varnothing 45$ - $\varnothing 50$	5.8 ± 1.0			

Straight Pin Mount

VQT Straight Standoff $\varnothing 40$, $\varnothing 45$ and $\varnothing 50$ optional



VQ Straight Standoff Pin Dimensions



Type	P	P ₁	W	W ₁
Standoff Pin (VQ)	3.75 ± 1.0	2.0 max.	1.5 ± 0.1	0.7 ± 0.2

CAUTION:

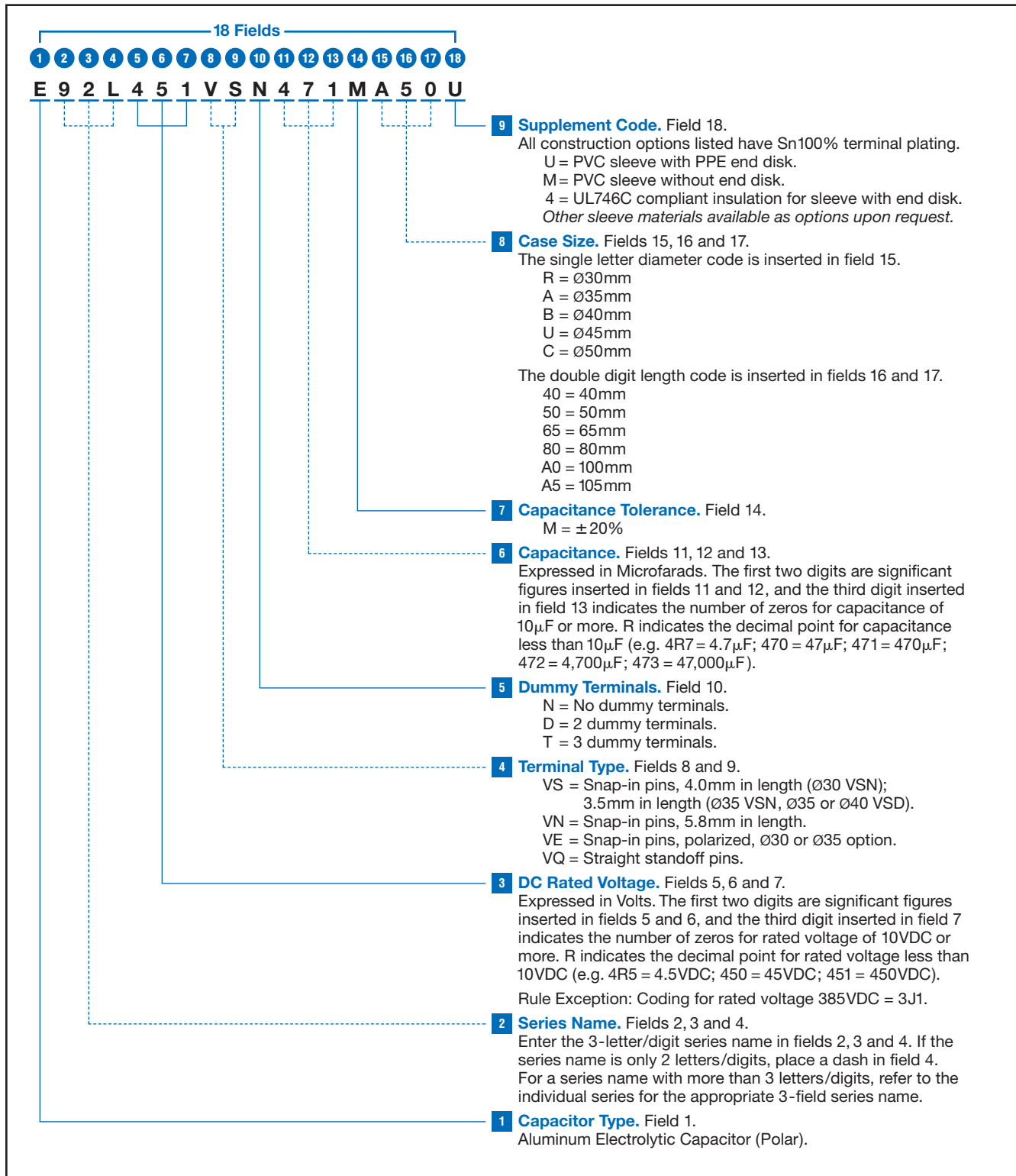
* Use the blank terminals for mechanical support only. The blank terminals must not be connected to a solder trace on the PC board but be electrically isolated from the negative and positive terminals.

** The vent may be located either on the bottom or side of the can.

*** The black sleeve with gray stripe negative pin indicator is standard. Also note in some cases, the sleeve color may change slightly due to the operating conditions, however, the discoloration will not impair capacitor function.

U92L Series

Part Numbering System for U92L Series When ordering, always specify complete 18-field global part number.



U92L Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
350 Volts 400 Volts Surge	330	E92L351VSN331MR40U	30 × 40	R40	0.314	2.1
	470	E92L351VSN471MR50U	30 × 50	R50	0.220	2.7
	680	E92L351VSN681MR65U	30 × 65	R65	0.152	3.7
	470	E92L351VSN471MA40U	35 × 40	A40	0.212	3.0
	680	E92L351VSN681MA50U	35 × 50	A50	0.146	4.0
	1,000	E92L351VSN102MA65U	35 × 65	A65	0.100	5.2
	1,200	E92L351VND122MA80U	35 × 80	A80	0.083	6.1
	1,500	E92L351VND152MAA0U	35 × 100	AA0	0.066	7.6
	820	E92L351VND821MB50U	40 × 50	B50	0.126	4.5
	1,200	E92L351VND122MB65U	40 × 65	B65	0.086	5.9
	1,500	E92L351VND152MB80U	40 × 80	B80	0.069	7.1
	2,200	E92L351VND222MBA0U	40 × 100	BA0	0.047	9.4
	1,200	E92L351VNT122MU50U	45 × 50	U50	0.096	5.5
	1,500	E92L351VNT152MU65U	45 × 65	U65	0.077	6.7
	2,200	E92L351VNT222MU80U	45 × 80	U80	0.052	8.7
	2,700	E92L351VNT272MUA5U	45 × 105	UA5	0.043	10.7
	1,500	E92L351VNT152MC50U	50 × 50	C50	0.088	5.8
	2,200	E92L351VNT222MC65U	50 × 65	C65	0.060	7.8
2,700	E92L351VNT272MC80U	50 × 80	C80	0.049	9.5	
3,300	E92L351VNT332MCA5U	50 × 105	CA5	0.040	11.8	
385 Volts 435 Volts Surge	270	E92L3J1VSN271MR40U	30 × 40	R40	0.369	1.9
	390	E92L3J1VSN391MR50U	30 × 50	R50	0.255	2.5
	560	E92L3J1VSN561MR65U	30 × 65	R65	0.178	3.4
	470	E92L3J1VSN471MA40U	35 × 40	A40	0.203	3.1
	560	E92L3J1VSN561MA50U	35 × 50	A50	0.171	3.7
	820	E92L3J1VSN821MA65U	35 × 65	A65	0.117	4.8
	1,200	E92L3J1VND122MA80U	35 × 80	A80	0.080	6.2
	1,500	E92L3J1VND152MAA0U	35 × 100	AA0	0.064	7.7
	820	E92L3J1VND821MB50U	40 × 50	B50	0.121	4.6
	1,200	E92L3J1VND122MB65U	40 × 65	B65	0.083	6.0
	1,500	E92L3J1VND152MB80U	40 × 80	B80	0.066	7.3
	1,800	E92L3J1VND182MBA0U	40 × 100	BA0	0.055	8.7
	1,000	E92L3J1VNT102MU50U	45 × 50	U50	0.107	5.2
	1,200	E92L3J1VNT122MU65U	45 × 65	U65	0.090	6.2
	1,800	E92L3J1VNT182MU80U	45 × 80	U80	0.060	8.2
	2,200	E92L3J1VNT222MUA5U	45 × 105	UA5	0.049	10.0
	1,200	E92L3J1VNT122MC50U	50 × 50	C50	0.103	5.5
	1,800	E92L3J1VNT182MC65U	50 × 65	C65	0.069	7.3
2,200	E92L3J1VNT222MC80U	50 × 80	C80	0.056	8.8	
2,700	E92L3J1VNT272MCA5U	50 × 105	CA5	0.046	11.0	
400 Volts 450 Volts Surge	270	E92L401VSN271MR40U	30 × 40	R40	0.354	1.9
	390	E92L401VSN391MR50U	30 × 50	R50	0.245	2.6
	560	E92L401VSN561MR65U	30 × 65	R65	0.171	3.5
	390	E92L401VSN391MA40U	35 × 40	A40	0.235	2.9
	560	E92L401VSN561MA50U	35 × 50	A50	0.164	3.8
	820	E92L401VSN821MA65U	35 × 65	A65	0.112	4.9
	1,000	E92L401VND102MA80U	35 × 80	A80	0.092	5.8
	1,200	E92L401VND122MAA0U	35 × 100	AA0	0.076	7.0
	680	E92L401VND681MB50U	40 × 50	B50	0.146	4.2
	1,000	E92L401VND102MB65U	40 × 65	B65	0.100	5.5
	1,200	E92L401VND122MB80U	40 × 80	B80	0.083	6.5
	1,800	E92L401VND182MBA0U	40 × 100	BA0	0.055	8.7
	1,000	E92L401VNT102MU50U	45 × 50	U50	0.107	5.2
	1,200	E92L401VNT122MU65U	45 × 65	U65	0.090	6.2

†For construction and terminal options, refer to the part numbering system for descriptions and codes.

*Refer to diagram of dimensions for detailed case size specifications.

U92L Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (µF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
400 Volts 450 Volts Surge	1,500	E92L401VNT152MU80U	45 × 80	U80	0.072	7.5
	2,200	E92L401VNT222MUA5U	45 × 105	UA5	0.049	10.0
	1,200	E92L401VNT122MC50U	50 × 50	C50	0.100	5.4
	1,500	E92L401VNT152MC65U	50 × 65	C65	0.080	6.8
	2,200	E92L401VNT222MC80U	50 × 80	C80	0.054	9.0
	2,700	E92L401VNT272MCA5U	50 × 105	CA5	0.044	11.2
420 Volts 470 Volts Surge	220	E92L421VSN221MR40U	30 × 40	R40	0.408	1.8
	330	E92L421VSN331MR50U	30 × 50	R50	0.298	2.3
	470	E92L421VSN471MR65U	30 × 65	R65	0.212	3.1
	390	E92L421VSN391MA40U	35 × 40	A40	0.264	2.7
	560	E92L421VSN561MA50U	35 × 50	A50	0.193	3.5
	680	E92L421VSN681MA65U	35 × 65	A65	0.137	4.4
	820	E92L421VND821MA80U	35 × 80	A80	0.106	5.4
	1,200	E92L421VND122MAA0U	35 × 100	AA0	0.082	6.8
	680	E92L421VND681MB50U	40 × 50	B50	0.150	4.2
	820	E92L421VND821MB65U	40 × 65	B65	0.107	5.3
	1,200	E92L421VND122MB80U	40 × 80	B80	0.084	6.5
	1,500	E92L421VND152MBA0U	40 × 100	BA0	0.065	8.0
	820	E92L421VNT821MU50U	45 × 50	U50	0.130	4.7
	1,200	E92L421VNT122MU65U	45 × 65	U65	0.093	6.1
	1,500	E92L421VNT152MU80U	45 × 80	U80	0.073	7.4
	1,800	E92L421VNT182MUA5U	45 × 105	UA5	0.053	9.6
	1,000	E92L421VNT102MC50U	50 × 50	C50	0.113	5.1
	1,500	E92L421VNT152MC65U	50 × 65	C65	0.081	6.7
1,800	E92L421VNT182MC80U	50 × 80	C80	0.063	8.3	
2,200	E92L421VNT222MCA5U	50 × 105	CA5	0.046	10.9	
450 Volts 500 Volts Surge	220	E92L451VSN221MR40U	30 × 40	R40	0.428	1.8
	330	E92L451VSN331MR50U	30 × 50	R50	0.312	2.3
	390	E92L451VSN391MR65U	30 × 65	R65	0.222	3.0
	330	E92L451VSN331MA40U	35 × 40	A40	0.318	2.5
	470	E92L451VSN471MA50U	35 × 50	A50	0.202	3.4
	680	E92L451VSN681MA65U	35 × 65	A65	0.143	4.3
	820	E92L451VND821MA80U	35 × 80	A80	0.111	5.3
	1,000	E92L451VND102MAA0U	35 × 100	AA0	0.086	6.6
	560	E92L451VND561MB50U	40 × 50	B50	0.170	3.9
	820	E92L451VND821MB65U	40 × 65	B65	0.122	5.0
	1,000	E92L451VND102MB80U	40 × 80	B80	0.095	6.1
	1,200	E92L451VND122MBA0U	40 × 100	BA0	0.073	7.5
	680	E92L451VNT681MU50U	45 × 50	U50	0.142	4.5
	1,000	E92L451VNT102MU65U	45 × 65	U65	0.102	5.8
	1,200	E92L451VNT122MU80U	45 × 80	U80	0.079	7.1
	1,800	E92L451VNT182MUA5U	45 × 105	UA5	0.058	9.2
	820	E92L451VNT821MC50U	50 × 50	C50	0.120	5.0
	1,200	E92L451VNT122MC65U	50 × 65	C65	0.086	6.5
1,500	E92L451VNT152MC80U	50 × 80	C80	0.067	8.1	
2,200	E92L451VNT222MCA5U	50 × 105	CA5	0.049	10.6	
500 Volts 550 Volts Surge	150	E92L501VSN151MR40U	30 × 40	R40	0.557	1.6
	220	E92L501VSN221MR50U	30 × 50	R50	0.380	2.1
	270	E92L501VSN271MR65U	30 × 65	R65	0.310	2.6
	220	E92L501VSN221MA40U	35 × 40	A40	0.380	2.3
	330	E92L501VSN331MA50U	35 × 50	A50	0.253	3.0
	390	E92L501VSN391MA65U	35 × 65	A65	0.214	3.6

† For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.

U92L Series

Standard Voltage Ratings - Snap Mount

Rated Voltage (WVDC)	Capacitance (μF)	Global Part Number†	Nominal Case Size* D × L (mm)	Case Size Code	Maximum ESR (Ω) at +25°C, 120Hz	Rated Ripple Current (A rms) at +85°C, 120Hz
500 Volts 550 Volts Surge	560	E92L501VND561MA80U	35 × 80	A80	0.149	4.6
	680	E92L501VND681MAA0U	35 × 100	AA0	0.123	5.6
	390	E92L501VND391MB50U	40 × 50	B50	0.225	3.4
	560	E92L501VND561MB65U	40 × 65	B65	0.156	4.4
	680	E92L501VND681MB80U	40 × 80	B80	0.129	5.2
	1,000	E92L501VND102MBA0U	40 × 100	BA0	0.088	6.9
	560	E92L501VNT561MU50U	45 × 50	U50	0.164	4.2
	820	E92L501VNT821MU65U	45 × 65	U65	0.112	5.5
	1,000	E92L501VNT102MU80U	45 × 80	U80	0.092	6.6
	1,500	E92L501VNT152MUA5U	45 × 105	UA5	0.061	9.0
	680	E92L501VNT681MC50U	50 × 50	C50	0.146	4.5
	1,000	E92L501VNT102MC65U	50 × 65	C65	0.100	6.1
	1,200	E92L501VNT122MC80U	50 × 80	C80	0.083	7.2
	1,800	E92L501VNT182MCA5U	50 × 105	CA5	0.055	10.0

†For construction and terminal options, refer to the part numbering system for descriptions and codes.

* Refer to diagram of dimensions for detailed case size specifications.